

Spatial New Data

EyeCom® II Picture Digitizer and Display

Now with
Model 808-19
REAL TIME
PROCESSOR



The EyeCom II processing speed has been increased by a factor of 100X by the newest option, the Real Time Processor. Operations on the input digitized picture can now be performed at television rates, 12.4 million additions/subtractions per second.

Image enhancement operations such as accumulation for noise reduction, spatial filtering for edge enhancement and background removal, and contrast enhancement are now performed in a fraction of a second.

PURPOSE: The Real Time Processor, in conjunction with the Model 808-8 Real Time Digitizer, accumulates many TV frames into the EyeCom Picture Refresh Memory. Accumulation reduces the video random noise by the square root of the number additions. The Model 808-19 can also subtract TV images from the Picture Memory. Thus, images may be subtracted for comparison. Using the scroll feature of the Picture Memory, the 808-19 can be used to rapidly produce gradient, Laplacian, and spatial filter operations.

PERFORMANCE PARAMETERS:

Input A: 8 bits at 12 MHz from Real Time Digitizer
Input B: Up to 16 bits from Picture Display Memory
Output: Input A and Input B processed by any of the operations shown in this table

ACTIVE-LOW DATA						
SELECTION				M=1 LOGIC FUNCTIONS	M=0: ARITHMETIC OPERATIONS	
S3	S2	S1	S0		C _n =0 (NO CARRY)	C _n =1 (WITH CARRY)
0	0	0	0	F=A	F=A minus 1	F=A
0	0	0	1	F=AB	F=AB minus 1	F=AB
0	0	1	0	F=A+B	F=AB minus 1	F=AB
0	0	1	1	F=1	F=minus 1 (2's COMPL)	F=ZERO
0	1	0	0	F=A+B	F=A plus (A+B)	F=A plus (A+B) plus 1
0	1	0	1	F=B	F=AB plus (A+B)	F=AB plus (A+B) plus 1
0	1	1	0	F=A⊕B	F=A minus B minus 1	F=A minus B
0	1	1	1	F=A+B	F=A+B	F=(A+B) plus 18
1	0	0	0	F=AB	F=A plus (A+B)	F=A plus (A+B) plus 1
1	0	0	1	F=A⊕B	F=A plus B	F=A plus B plus 1
1	0	1	0	F=B	F=AB plus (A+B)	F=AB plus (A+B) plus 1
1	0	1	1	F=A+B	F=A+B	F=(A+B) plus 1
1	1	0	0	F=0	F=A plus A	F=A plus A plus 1
1	1	0	1	F=AB	F=AB plus A	F=AB plus A plus 1
1	1	1	0	F=AB	F=AB plus A	F=AB plus A plus 1
1	1	1	1	F=A	F=A	F=A plus 1

A: Accumulator Picture Memory Pixel Values.

B: Real Time Digitizer Pixel Values.

F: ALU Result.

COMMAND: Program controlled from register in EyeCom to initiate add, subtract, left or right shift on single frame.

NUMBER OF FRAMES ACCUMULATED: Under program control, any number of frames (not exceeding 256 with 8-bit digitizer and 16-bit memory) can be accumulated 30 times/second.

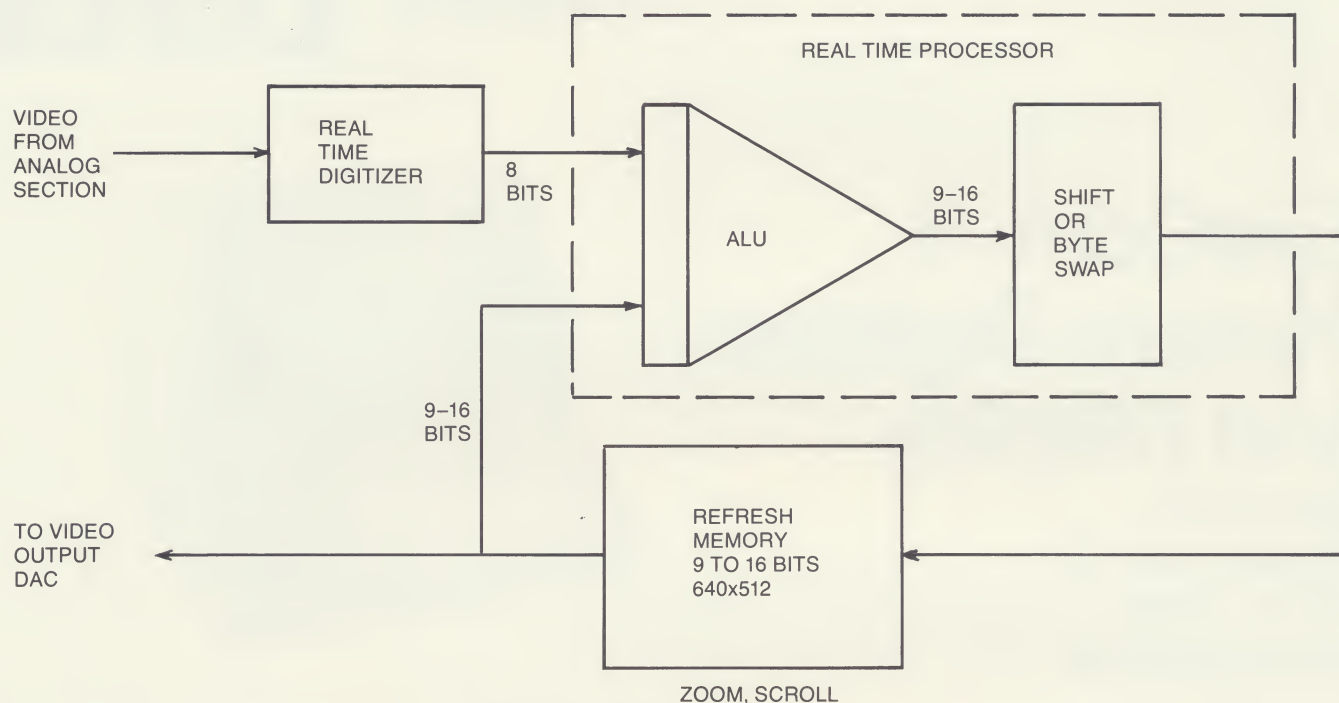
CONFIGURATION: Single plug-in card fits new EyeCom 109PT backplane.



Spatial Data Systems, Inc.
The Image Processing Company

P.O. Box 978 • 508 So. Fairview Ave., Goleta, CA 93117 • (805) 967-2383 TWX 910-334-3462

Model 808-19 REAL TIME PROCESSOR



The Real Time Processor (RTP) option adds an Arithmetic Logic Unit (ALU) between the Real Time Digitizer (RTD) and the Picture Display Refresh Memory. When the EyeCom is given the command to digitize a video frame, the data from the RTD is processed with the picture data from the refresh memory. The result of the process replaces the picture data in the memory, and can be immediately viewed on the EyeCom display in the normal way. When the refresh memory is scrolled from its initial position, the pixels are displaced with respect to the RTD output and operations take place on pixels separated by the amount of scroll. This feature provides rapid edge enhancement and spatial filtering.

The ALU can provide all the operations shown in the table which includes add and subtract, as well as direct path for the RTD data for normal digitization of a frame. Following the ALU is a hardware bit shifter that can shift the result left or right, one bit each frame time. The shifter can also swap bytes of the result prior to entering the data into the refresh memory.

USES:

- ★ Enhancement of fluoroscopic images.
- ★ Automatic mechanical inspection.
- ★ Analysis of Landsat and remote sensing photographs.
- ★ Automated microscopy in Biology, Metallurgy and Geology.
- ★ Computer aided line drawing digitizing.

Write for complete information to: **Spatial Data Systems, Inc.**

P.O. Box 978, 508 So. Fairview Ave., Goleta, CA 93017 • Tel: (805) 967-2383

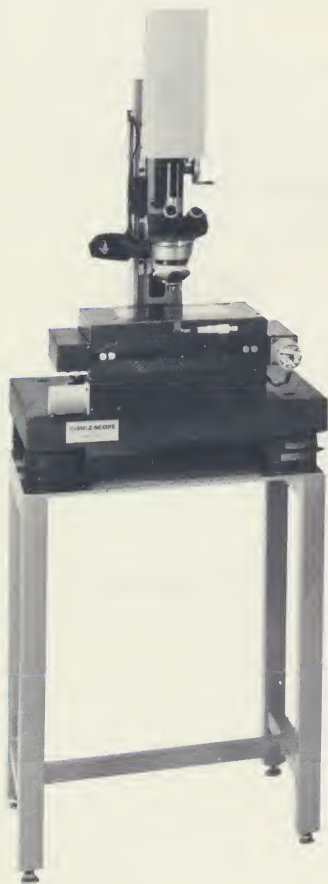
EyeCom® Parts Measurement System-

*A visual inspection station
for off-line or on-line
quality control.*

- ACCURATE
- AUTOMATIC
- NON CONTACTING
- PROGRAMMABLE

SYSTEM INCORPORATES A HIGH-PRECISION TV SCANNER, CONTROL CONSOLE, MICRO PROCESSOR WITH DUAL FLOPPY DISC, PRINTER AND AUTOMATIC POSITIONING STAGE.

Master parts programming is sequenced by means of joystick and keyboard input with results displayed on the TV screen. Programming can also be accomplished with Basic language. Edge detection using gray scale interpretation and autofocus as well as align, diameter, radius, and other standard routines are all easily linked to the user's part program and can be run or stored for future use. An unlimited variety of part programs can be stored on floppy discs. Statistical analysis programs can be formatted in Basic language and results printed or transferred to a host computer through optional interfaces.



Specifications for EyeCom PMS

Automated Non-Contact Measurement System

SCANNER: Geometric Distortion less than 1/2% over field of view.

Resolution 640 elements horizontal x 480 vertical.

Signal/Noise Ratio 46 DB typical.

Dimensions: 4.5 x 4.5 x 12", weight 8.0 lbs.

PROCESSOR: 16 Bit Microprocessor, dual density floppy disc drive, LA34 printer (80 column), EyeCom image processor terminal with keyboard and joystick cursor control, 12" B/W display monitor. Power: 120 volts AC, 60 Hz, 1000 watts.

MEASUREMENT TABLE: Table motion 4"x8" stepping increment .000~~50~~³⁵". Resolution .000020". Position repeatability $\pm .000040$ ", linear accuracy .0001"/inch or better. Physical size: 10" x 14" x 5" high with open center. Includes linear encoders with position accuracy ± 1 micron/meter.

VERTICAL MOTION: Cast meehanite column with 6" travel. Stepping increment .000156".
18" ~~24~~" x 24" granite base. Vertical straightness and perpendicularity to base is within .0001"/inch of travel. Mounting includes steel floor stand and air dampers.

LIGHTING: a. Transmitted Lighting—a fiber optics bundle with quartz light is used to back illuminate objects on the X, Y stage, programmable.
b. Incident Lighting—incandescent lamp housing with prisms to provide through the lens lighting. Lamp housing has provision for filters or polarizers, programmable.

OPTICS: Standard optics includes 5X objective lens with bright field/dark field capability. Overall magnification through the video is approximately 50:1. Other optical magnifications available on request.

CALIBRATION STANDARD: Chrome on glass calibration standard traceable to NBS standard is provided with system.

STANDARD CONFIGURATION: System is configured as three individual pieces:

1. X, Y, Z motion table with granite base, floor stand and air dampers for vibration isolation. Scanner is mounted on "Z" axis.
2. Console with EyeCom terminal.
3. Processor cabinet with printer.



Spatial Data Systems, Inc.
The Image Processing Company

P.O. Box 978 • 508 So. Fairview Ave., Goleta, CA 93117 • (805) 967-2383 TWX 910-334-3462